Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

[0001] The invention relates to a gynecological instrument for introducing an irradiation catheter. In particular, the invention relates to a tubular applicator for irradiating gynecological tumors, which is to be placed in the cervix and the bottom of the vagina.

[0002] DE4413489, disclosing the preamble of claim 1, shows such an instrument, where irradiation positions are realized by a central catheter which is introduced into the uterus and two laterally pivotable catheters at whose ends the so-called ovoids have been provided and which are pressed against the cervix, being pushed apart at the front of the cervix. The applicator can be connected to a so-called remote afterloading machine which via tubes moves a radioactive source to an irradiation position in the tubes. The applicator usually comprises multiple tubes with two ovoids (egg-shaped spacers) on the two outer tubes, which ensure that the irradiation doses on the surface remain below the permissible limit. Alternatively, a so-called ring applicator tube can be used, whereby around the cervix a ring-shaped tube is applied in which a radioactive source can be moved and a dosed radiation delivery is possible. The irradiation is done by bringing a radiation source provided at the end of a guide cable via a guide tube and the catheter in the right position and allowing it to deliver radiation there for a predetermined length of time to combat the tumor.

[0003] Such applicators are often too large to allow of insertion in assembled condition and are then provided tube by tube and fixed by means of a screw clamp. Additionally, then, in the apparatus, in the direction of the large intestine and in the direction of the bladder, the interspace is stuffed with gauze. This is a laborious process and possibly painful and uncomfortable and often done under anesthesia which moreover is carried out differently by different doctors, which may adversely affect the medical results.

[0004] This method accordingly has disadvantages associated with it because it depends on the skills of the medical staff whether it always yields an optimum result. Because the positioning of the central intrauterine tube and other tubes (in particular the colpostats or the ring applicator tube) may shift relative to each other, this entails risks for the patient, also because the bladder and the large intestine may thus be exposed to an excess of radiation.

[0005] It is an object of the invention to provide an instrument where these disadvantages are obviated and where the catheters can be easily held at a uniform distance from each other, without the catheters being able to shift relative to each other during a treatment. At the same time, it is an object of the invention to provide an instrument which can be introduced quickly and with a minimal burden and whose positioning is accurate and reliable.

[0006] This object is achieved by an apparatus for irradiating cervical cancer, comprising multiple source guide tubes with a coupling piece situated outside the patient which connects the tubes outside the patient, characterized in that the source guide tubes are formed such that the portions of the tubes situated in the patient upon insertion hook to each other so that the tubes are fixated relative to each other.

[0007] The invention will be elucidated in more detail in and by a description of the drawings, in which:

Fig. 1 shows a side elevational view of a central catheter tube, provided with a positioning means according to the invention;
Fig. 2 shows a side elevation of the central catheter tube, provided with a positioning means according to the invention and a colpostat, which is fixated by the positioning means;
Fig. 3 shows a top plan view of the configuration of Fig. 2;
Fig. 4 shows a schematic perspective front view of the configuration of Fig. 2; and
Fig. 5 shows a schematic perspective view of a positioning means for a ring applicator.

[0008] In the drawings, the same or corresponding parts are designated by the same reference numerals.

[0009] Fig. 1 shows a side elevational view of a (part of a) gynecological applicator 1, to be inserted in the vagina against and into the cervix. Shown in particular is a central catheter tube 2 (also named intrauterine tube), provided with a positioning means 3. This means comprises in the exemplary embodiment a central flange-shaped stopper 3, also named cervical flange, which has been adapted according to the invention. The stop 3 serves to abut, during radiation, against the cervix, in some cases against a ring-shaped element (not shown, so-called Smith sleeve) which may be fixedly attached on the cervix to effect a reproducible fixation of the applicator 1. The central catheter tube 2 accordingly serves for insertion into the cervix for intrauterine irradiation. Fig. 2 shows a side elevational view of the applicator 1 as in Fig. 1. As shown, the applicator 1 in the exemplary embodiment comprises two plastic ovoid structures or colpostats 4 (see also Fig. 3 and Fig. 4), which are combined with the intrauterine tube 2, so that after placement, during the irradiation, a high dose can be delivered to the base of the uterus without the ambient tissue such as large intestine and bladder needing to be burdened unduly heavily.

[0010] Preventing this excessive burdening is of major importance since otherwise serious complications may be expected. Owing to the makeup of this model of applicator (with colpostats), typically a construction is used which, to save weight, utilizes thin tubes, with the tubes blocked on the rear side as represented in Fig. 1 and Fig. 2. To that end, the apparatus comprises a coupling piece 5 situated outside the patient, for instance a clamp or screw, which connects the tubes, in particular the intrauterine tube 2 and the tube 6 of the colpostat 4 outside
An apparatus (1) for irradiating cervical cancer, comprising:

- multiple source guide tube members (2, 6, 4, 9);
- a first coupling piece (5) connected to one of the source guide tube members (2, 6, 9), to be situated outside a patient for coupling to another source guide tube member (2, 6, 9) outside the patient;
- a second coupling piece (3) connected to one of the source guide tube members (2), for coupling to the other of said source guide tube members (4, 6, 9), the second coupling piece (3) arranged to be situated inside the patient;
- characterized in that the second coupling piece (3) is formed as an insert for insertion in a corresponding insertion opening formed in said another guide tube member (4, 9); so as to couple said guide tube members (2, 4, 6, 9) relative to each other inside the patient.

2. An apparatus according to claim 1, further comprising a central catheter tube (2) to be guided into the uterus, which is provided with a flange-shaped stop means (3) for stabilizing the central tube (2) relative to the uterus, the stop means (3) being formed for securing a position of the central tube (2) relative to the further source guide tubes (4, 6, 9).

3. An apparatus according to claim 2, wherein the source guide tubes (4, 6) comprise two ovoid structures (4) movable out of the center, and wherein the stop means (3) is designed with two projections each falling into a corresponding opening of an ovoid structure (4).

4. An apparatus according to claim 2, wherein the source guide tubes (9) comprise a ring applicator tube (9) and wherein the flange-shaped stop means (3) falls into the central opening of a ring applicator tube (9).

Patentansprüche

1. Vorrichtung zum Bestrahlen von Gebärmutterhalskrebs, mit

- mehreren Quellenführungsröhren (2, 6, 4, 9),
- einem ersten Kopplungsstück (5), das mit einem der Quellenführungsröhren (2, 6, 9) verbunden ist und das außerhalb eines Patienten anzuordnen ist, um außerhalb des Patienten mit einem anderen Quellenführungsrohrteil (2, 6, 9) verbunden zu werden,
- einem zweiten Kopplungsstück (3), das mit einem der Quellenführungsröhren (2) verbunden ist, um es mit den anderen Quellenführungsröhren zu verbinden.
rungsrohrteilen (4, 6, 9) zu verbinden, wobei das zweite Kopplungsstück (3) innerhalb des Patienten anzuordnen ist.
- dadurch gekennzeichnet, dass das zweite Kopplungsstück (3) als ein Einsatz zum Einsetzen in eine entsprechende Einsetzöffnung ausgebildet ist, die in dem anderen Quellenführungsrohrteil (4, 9) gebildet ist, um so die Quellenführungsrohrteile (2, 4, 6, 9) innerhalb des Patienten relativ zueinander zu befestigen.

2. Vorrichtung nach Anspruch 1, die weiter ein zentrales Katheterrohr (2) aufweist, das in die Gebärmutter einfühbar ist und das mit einer flanschförmigen Stoppereinrichtung (3) zum Stabilisieren des zentralen Rohrs (2) relativ zu der Gebärmutter versehen ist, wobei die Stoppereinrichtung (3) so ausgebildet ist, um eine Position des zentralen Rohrs (2) relativ zu den weiteren Quellenführungsrohren (4, 6, 9) zu sichern.

3. Vorrichtung nach Anspruch 2, wobei die Quellenführungsrohre (4, 6) zwei eiförmige Strukturen (4) aufweisen, die aus dem Zentrum beweglich sind, und wobei die Stoppereinrichtung (3) mit zwei Vorsprüngen gestattet ist, die jeweils in eine entsprechende Öffnung einer eiförmigen Struktur (4) eingreifen.

4. Vorrichtung nach Anspruch 2, wobei die Quellenführungsrohre (9) ein Ringapplikatorrohr (9) aufweisen und wobei die flanschförmige Stoppereinrichtung (3) in der zentralen Öffnung eines Ringapplikatorrohres (9) liegt.

Revendications

1. Appareil (1) pour irradier un cancer du col de l’utérus, comprenant :
- une pluralité d’éléments tubulaires de guidage de sources (2, 6, 4, 9)
- un premier élément de couplage (5) associé à l’un des éléments tubulaires de guidage de sources (2, 6, 9) et destiné à être situé à l’extérieur de la patiente en vue du couplage à un autre élément tubulaire de guidage de sources (2, 6, 9) à l’extérieur de la patiente,
- un second élément de couplage (3) associé à l’un des éléments tubulaires de guidage de sources (2) en vue du couplage à l’autre desdits éléments tubulaires de guidage de sources (4, 6, 9), le second élément de couplage (3) étant conçu pour être situé à l’intérieur de la patiente ;
- caractérisé en ce que le second élément de couplage (3) est conçu sous la forme d’un insert venant s’insérer dans un orifice d’insertion correspondant formé dans ledit autre élément tu-

bulaire de guidage de sources (4, 9) de manière à coupler lesdits éléments tubulaires de guidage (2, 4, 6, 9) les uns avec les autres à l’intérieur de la patiente.

2. Appareil selon la revendication 1, caractérisé en ce qu’il comprend également un cathéter central (2) devant être guidé dans l’utérus, lequel cathéter est pourvu d’un moyen de butée (3) en forme de collerette pour le stabiliser par rapport à l’utérus, le moyen de butée (3) étant formé pour immobiliser le tube central (2) par rapport aux autres tubes de guidage de sources (4, 6, 9).

3. Appareil selon la revendication 2, caractérisé en ce que les tubes de guidage de sources (4, 6) comprennent deux structures ovoïdes (4) aptes à être éloignées du centre et en ce que le moyen de butée (3) est établi avec deux ressauts s’engageant chacun dans un orifice correspondant d’une structure ovoïde (4).

4. Appareil selon la revendication 2, caractérisé en ce que les tubes de guidage de sources (9) comprennent un tube applicateur annulaire (9) et en ce que le moyen d’arrêt (3) en forme de collerette s’engage dans l’ouverture centrale d’un tube applicateur annulaire (9).
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 4413489 [0002]